

Notes: History
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April 4, 1989

Mr. E. B. King, President
Jumbo Mining Company
6305 Fern Spring Cove
Austin, Texas 78730

Dear Mr. King:

Re: Technical Review of Notice of Intention to Commence Large Mining Operations,
Drum Mountain Project, M/023/013, Juab County, Utah

Thank you for your February 3, 1989 response to the Division of Oil, Gas, and Mining's (DOGM) December 6, 1988 initial review of the proposed Drum Mountain Project in Juab County, Utah. An onsite inspection was performed on March 10, 1989 to confirm some of the statements made in your February 3rd submittal. Unfortunately, the application remains incomplete and we cannot proceed toward tentative approval until the following technical concerns have been resolved.

1. On October 12, 1988, JUMBO effectively became the new owner for of the Drum Mine. The sales agreement with WSMC was finalized as of this date. To date, JUMBO has not filed a complete permit transfer application with DOGM. Consequently, WSMC is still the effective permit holder of the Drum Mine.

The Permit Transfer and the replacement reclamation surety must be resolved before DOGM will grant approval of any development of the Drum Mountain Project (Alto-Ibex properties).

TECHNICAL CONCERNS:

R613-004-106(2) - Operation Practices, Deleterious Materials

Reference Operator's 1.0

The Division will accept the operator's argument for the absence of acid-forming material associated with the waste rock material. However, in reading the Drum Mine, 1983, Mining and Reclamation Plan, it is apparent that alkaline materials may exist in the parent rock. Soil analyses performed at the Drum site indicate high sodium and SAR values at levels 2 to 3 feet below the surface.

The Division requests that the operator evaluate waste material at the Alto-Ibex and Drum sites for sodium and SAR (sodium adsorption ratio). These tests must come from representative samples of the waste material. The operator's sampling methodology must be reviewed by the Division prior to obtaining the waste material samples.

R613-004-112 - Variance

Reference Operator's 3.1 - Topsoiling

A variance will be granted for topsoil salvaging at the Alto-Ibex pits and waste dumps. Field verification, by Division staff, confirmed that salvagable topsoil does not exist in the areas to be disturbed. The operator's argument for natural seeding to do the job of revegetation at this site, is not acceptable. The plant species, indicated in the photos are of undesirable plants (halogeton, koshia, and cheatgrass, i.e., weeds). These species are not palatable to wildlife or livestock, do not make good soil binders, do not provide good wildlife habitat, and do not provide a diverse, persistent vegetative community. The range condition of these areas would be rated as very poor.

Reference Operator's 3.2

The Division accepts the operator's proposal for pit reclamation at the Alto-Ibex sites. Variances will be granted for pit highwalls and revegetation associated with the pits. The only requirement will be that pit roads be ripped, fertilized, seeded, and imprinted.

If an alternate mining method is used at these sites (e.g., mountain top removal), then these reclamation variances will need to be reevaluated by the Division.

Reference Operator's 3.3

The operator's argument, that angle of repose dump slopes will remain stable over time, may be true. However, experience and research has shown that such slopes will not provide conditions conducive to acceptable revegetation. A variance to allow angle of repose slopes for the leach pads or waste rock dump slopes was not granted in the original Drum Mine permit. The BLM approval for the Drum Mine also required regrading of the waste rock dump outslopes to a 3:1 configuration. The leaching pad areas were approved to be regraded to conform to approximate original contour.

Because topographic constraints at the Drum Mine site are not a restricting factor, the dumps and heap leach pads can be graded to blend into the surrounding contours, or 3:1 slopes (as originally permitted).

No angle of repose slope variance will be granted for the heap leach pads at the Drum site. A test plot(s) will need to be established on a representative waste rock dump slope which has been regraded to a 3:1 configuration. The Division will defer its decision to grant a variance to angle of repose slopes on the waste rock dumps until the results of revegetation test plot studies are available.

However, the Division will grant a variance for angle of repose slopes at the Alto-Ibex sites, where dumps must be placed on natural slopes that are steeper than 2:1.

R613-004-107(5) - Operational Practices, Soils

Reference Operator's 6.1

The Division will not require the operator to salvage topsoil where none exists. Waste areas must still be revegetated. If the waste material proves to be deleterious then it must be covered with borrowed material.

Reference Operator's 6.2

The Division will accept the soil survey information, provided in the 1983 Drum Mine Plan, in lieu of another survey to be performed for the Jumbo site. The survey information provided in this plan, indicates that soils in the area range from 6 to 60 inches in depth, depending on topography. If the operator wants to defer to this information, this would indicate the existence of salvageable topsoil in the alluvial valleys associated with the Alto-Ibex site and Drum sites. The possibility of obtaining borrow material therefore exists.

Reference Operator's 6.3

The operator has asked that the Division refer to soils information from the Drum Mine Plan when referring to soils questions. The Drum mine plan does not provide information concerning nutrient or toxicity levels of the waste material. If this material is to be used as a plant growing medium, without benefit of topsoil, the operator will be required to provide proof that the waste material is capable of sustaining quality, perennial vegetation.

The operator must obtain representative samples of the waste material to be revegetated. These samples must be analyzed for the following parameters: nitrate nitrogen, available phosphorous, exchangeable potassium, soil pH, electrical conductivity, texture, sodium adsorption ratio, selenium, and boron. The laboratory results must then be provided to the Division for evaluation.

Reference Operator's 6.31

The photographic evidence, provided by the operator, does not provide conclusive evidence that the material provides a healthy growth medium for plants other than undesirable annuals (weeds). The operator will be required to reclaim the area with adaptable, perennial species, which will support the postmining landuse (i.e., livestock and wildlife grazing/habitat).

Reference Operator's 6.32

The Division concurs with the operator's rational that borrowing topsoil from other areas will cause greater disturbance than disturbing only one area. However, if the waste material proves to be deleterious, the Division will require that good material be borrowed from another suitable area to cover the wastes.

Reference Operator's 6.4

The operator will be required to reclaim any prelaw disturbed areas that are redisturbed as part of the ongoing and proposed mining operations. However, the operator will not be expected to retopsoil these areas. It would benefit the operator to designate, on a map, those areas to be redisturbed. A revegetation variance can be requested for these areas, otherwise the operator will be expected to meet the 70% revegetation standard prior to bond release.

R613-004-111(13) - Revegetation

Please change *Chrysothamnus nauseosus* (rabbitbrush) in the recommended seed mix to *Chrysothamnus viscidiflorus*. According to the Drum Plan, this species of rabbitbrush is better adapted to the conditions of this site.

Reference Operator's 11.1

The Division will not approve the operator's request to allow natural invasion or natural revegetation for any minesite area. An exception would be for the pit highwalls and benches at the Alto-Ibex, Monarch and Keystone test pits, and the Drum minesites.

The operator must still reseed those areas where a revegetation variance has been approved, but will not be required to meet the 70% revegetation standard, prior to reclamation surety release. This would include areas such as dump slopes which exceed 3:1, and terraces or benches which could support some vegetation.

Reference Operator's 11.2

The Division will require, depending on the results of waste material analyses, that the operator rip, mulch, fertilize, and reseed the tops of the waste dumps. This is particularly true for areas where no topsoil is to be applied.

Reference Operator's 11.3

It is questionable whether the operator's voluntary revegetation test plots will produce the type of results necessary to determine an acceptable revegetation methodology for this site or the Drum site. It is our suspicion, that the waste material alone will support a healthy, weed-infested vegetative community. However, desirable species will find it difficult, if not impossible, to gain a foothold in such an environment.

The recent test plots, will make good controls to compare with other plots. The operator should develop several different revegetation test plots, using different soil amending procedures. The type of soil amendments to be applied will be determined after evaluating the analytical results of representative waste material samples. By proceeding in this manner, the most reasonable approach to reestablishing a good vegetative community on the site can be accomplished.

R613-004-111 (12) & (13) - Topsoil and Revegetation

Reference Operator's 12.1

The argument for natural reseeding of areas at the Alto-Ibex site or the Drum site is not acceptable. The operator will be expected, at a minimum, to rip and reseed areas at the site accessible to reclamation equipment. This might include benches and roads in the pits themselves. A field visit will be made to the site this spring to verify any such Division requirements.

R613-004-111(12)

Reference Operator's 14.3

On page 6, item #3 of our December 6th letter, we indicated that the approved plan for the Drum Mine included a commitment to salvage and stockpile approximately 30,000 cubic yards of topsoil for reclamation. This volume was based upon our initial review of Western States Minerals Corporation's (WSMC) 1985 and 1986 annual reports. After reviewing the final approval documents for the Drum Mine, this figure could not be verified.

Western States Mineral's, approved 1983 Mining and Reclamation Plan for the Drum Mine, indicates that areas to be reclaimed will be covered by 6 inches of topsoil. The approved plan indicates that @29 acre-feet (46,786 cubic yards) of topsoil would be salvaged and stockpiled for ultimate reclamation.

On February 21, 1984, DOGM received an amendment from WSMC to construct a 13.25 acre Waste Rock Leach Dump at the Drum Mine. Approximately 10,700 cubic yards of topsoil was to be salvaged and stockpiled (average 6-in. depth/acre). On June 4, 1984, DOGM received a request to amend the February amendment and reduce the disturbed area to 5.5 acres. Assuming a 6-inch stripping depth, a total of 4,440 cubic yards would be salvaged under the revised amendment. On March 28, 1985, DOGM approved this 5.5-acre amendment (Low Grade Ore Heap).

A 56-acre expansion (Low Grade Ore Heap) to the Drum Mine permit was approved by DOGM on March 28, 1985. The revised surety estimate for this amendment included costs to respread another 5,000 cubic yards of topsoil over 26 acres (see WSMC letter dated 8/5/85). These adjustments, when added to the originally approved mine plan, yield a grand total of 56,226 cubic yards of topsoil that should have been stockpiled.

WSMC's 1985 and 1986 annual reports indicate that only 10,000 cubic yards were salvaged. This topsoil volume could not be verified during our March 10th onsite inspection. We estimated that less than 2000 cubic yards of topsoil is currently stockpiled onsite.

It is obvious that this volume of topsoil will not be sufficient to reclaim the disturbed areas. If the operator is going to be able to meet our final bond release requirements on this acreage, then it will likely be necessary to amend the waste material or borrow the needed topsoil material elsewhere.

Because the formal permit transfer process has not been finalized with this office, DOGM cannot formally recognize JUMBO as the new permittee/operator of the Drum Mine. Therefore, the topsoil deficiency must be addressed before WSMC's reclamation surety will be released. DOGM may require that sufficient topsoil (or suitable substitute plant growth material) be acquired and stockpiled at the Drum Mine to resolve the topsoil deficiency.

One possible alternative to actual topsoil acquisition, would be to estimate the costs required to obtain the deficient topsoil volume and deduct that amount from WSMC's reclamation surety.

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Mr. E. B. King
M/023/013
April 4, 1989

Thank you for your patience and cooperation in completing this permitting action. Please provide your written response to this letter by May 1, 1989. Please contact me or D. Wayne Hedberg of my staff should you have questions pertaining to this review.

Sincerely,

Lowell P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program

DWH/jb
cc: F. Rex Rowley, BLM, House Range Resource Area
Don Ostler, BWPC
Jerry Mansfield, State Lands
Minerals team
MN3/54-60